

The Third Scientific and Technical Conference on the Improvement of the Wear Resistance and Service Life of Machines

By studying with it nickel and 0.7% cobalt alloys under dry friction at 315°C, the author has reported the results of his test which showed that they have the best wear resistance at high temperatures, while the initial hardness is of little consequence. The optimum position of a new alloy with a high wear resistance is 1/100 of the steel under high-speed test and ordinary conditions. Little wear resistance under dry friction at 315°C, however, is a condition of a chemical process, according to the paper. The heat resistance of cast iron is the most important factor in wear resistance under sliding friction, that the best material is cast iron at high temperatures (up to 850°C) depends on the wear resistance. Based on macroscopic studies of a steel alloy, the author has found that the wear resistance of a steel alloy is determined by the conditions for sliding and for the application of the alloy under different conditions were given.

Y. K. Kozlov, Dr. Engineer, Candidate of Technical Sciences, in his paper, "The Wear Resistance of Wire Ropes," has shown that the failure of a wire rope is caused by an abrupt increase in the failure occurs before failure occurs. The author has shown

...istance and Service Life of Machines

...of anti-friction metals such as cast iron on
...steel pulleys. In unlubricated operation, such
...increase the wear life of wire ropes by a factor of 2-3.

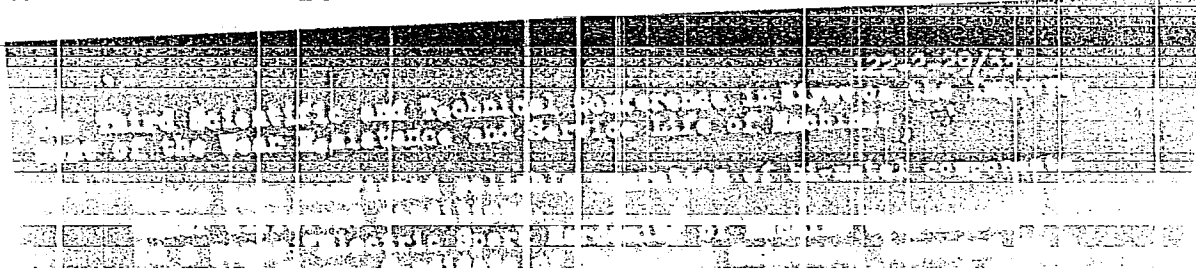
...Candidate of Technical Sciences, in his paper
...for wear-resistant Hard Facing Deposits, stated the
...basis and methods of alloying to obtain the desired
...and surveyed the fields of application of different
...of deposition of wearing components.

...his paper, "Electric Slag Method of Hard Facing for Wear
...Resistance", I.K. Pokhodnya, Candidate of Technical Sciences
...the electric slag process for hard facing of different
...and concluded that this method is appropriate when
...large quantities of metal have to be deposited or when large
...numbers of components require treatment.

...V. Simonenko, Engineer, suggested in his paper "The Electric
...Method of Making Bi-metal Components" a new method
...of manufacturing copper base alloys. The alloying process
...temperature much below the fusion temperature of copper
...economies are achieved in labour cost and in solid waste
...and automatic production procedures can be applied.

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18(5)

AUTHORS:

SOV/135-59-8-6/24
Astaf'yev, S.S., L'vov, D.S., Rczhdestvenskiy, Yu.L.
and Slepak, E.S., Candidates of Technical Sciences

TITLE:

Butt Welding of Antifriction Bearing Ring Blanks

PERIODICAL:

Svarochnoye proizvodstvo, 1959, Nr 8, pp 18-21 (USSR)

ABSTRACT:

At the present time the blanks of antifriction bearing rings are usually produced by hot stamping on horizontal forging machines or by turning from thick-walled pipes. The coefficient of utilization of the metal for conical bearings does not exceed 0.40-0.45. The rapid progress in mechanical engineering, however, which is urged in the resolutions of the XXI Convention of the Communist Party of the Soviet Union, requires a considerable increase in the output of bearings. It is especially important in this connection to find a more efficient technology in the production of the bearing rings. In the following part the results of an investigation are given, which was carried out in the Institute of the Bearing Industry in collaboration with the department for welding in the

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TsNIITMASH and which dealt with contact welding of ring blanks. The material: the bearing rings were made of chrome steels ShKh 15, ShKh 15SG, and the low-carbon steels 18 KhGT, 12Kh 2N4A, and 20Kh2N4. The steels of the first group have a high stability; they have a high resistance to fatigue and wear and are resistant during welding and mechanical treatment. The steels of the second group are cemented, and after the hardening they have a tough core, which improves their working qualities under conditions of dynamical strain. The first thing to be studied was the welding of the outer ring blanks of the bearing 310, which is made of steel ShKh15 and has a section of 30x12 mm (the welding of rings of this steel was studied under the direction of A.S. Gel'man, TsNIITMASH, in 1947). Afterwards the welding of outer ring blanks of the conical bearings 7815, 7514, 46215, and 7718 of the steel 18KhGT (Table 1) with a section of 12x34, 10x27, 8x30, and 12x43 and an outer diameter of 135, 125, 130, and 155 mm was examined. If chrome (about 1%) and manganese (0.17-0.18%) are added to the steel 18KhGT

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the durability, impact resistance, and hardness of the steel is improved without impairing the plastic qualities to any considerable degree. Titanium helps to prevent a growing of the core when the steel is heated to 1000-1100°C, combines the carbon in carbides, and reduces the percentage of perlite in the steel, thus improving its plasticity. Besides, the titanium neutralizes oxygen and nitrogen, which are the cause for an ageing, in nitrides and oxides. The equipment: the test rings were welded on a butt welding machine with lever gear and a capacity of 75 KVA and on semi-automatic machines with a capacity of 150 and 300 KVA. The blanks were clamped between the electrodes of the machine with the edges or sides. The welding of the blanks: butt welding was examined with and without preheating. The welding tests with rings of steel of type ShKh15 showed that it is possible to obtain joints of good quality if the butt welding is continuous. In the experiments with this sort of steel it was found that the carbon is to a certain extent reduced along the line of the seam. To get rid of this

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undesirable effect an additional investigation will be necessary. The work with steel of type 18KhGT was begun with tests in butt welding with preheating. Good welded joints were obtained with this method. To get a better clamping of the rings in the machine an extension space was left in the welding zone. To compensate the shunt resistance in the welding of the rings a secondary voltage of 5.2-5.6 was taken instead of that used for welding of straight blanks which is only 4.5-5.0. It was confirmed that the best results were obtained with continuous butt welding. In some of the seams, however, flaws in form of oxides were observed. The influence of hot deformation on the mechanical qualities of the welded joints was also studied, and dilatancy tests were carried out. The high requirements to the stability of the products made it necessary to work out control methods, which do not destroy the welded joints, for conditions of mass production. The magnetic and ultrasonic methods are both used. The main advantage of the new technology is the lowering of the cost-price by considerably raising

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the coefficient of utilization of the metal. The authors come to the following conclusions: the possibility and practicability of producing embossed welding rings with the new technology are shown, which guarantees an utilization coefficient of the metal up to 0.65. The hot plastic deformation of the welding ring somewhat raises the plasticity of the welded joint, whereby its impact resistance is strengthened while the values of the fluctuation and stability remain fixed. An effective control of the quality of the welded joints can be achieved by distributing the rings after the welding and by using ultrasonic defect detection methods. The working ability of the embossed welding rings of steel of type 18KhGT is as high as of those of steel of type ShKh15, which were manufactured with the described technology by turning from forgings. There are 3 photographs, 2 tables, 4 graphs and 1 diagram.

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ASTAF'YEV, S.S., kand.tekhn.nauk

Electric spark equipment created by the Central Scientific Research
Institute of Technology and Machine Building. [Trudy] TSNIITMASH
89:204-215 '59. (MIRA 12:4)

(Case hardening—Equipment and supplies)
(Electric apparatus and appliances)

ASTAF 0 2

PHASE I BOOK EXPLOITATION

SOV/5105

Nauchno-tekhnicheskaya konferentsiya po voprosam povysheniya iznosostoykosti i sroka sluzhby mashin.

Povysheniye iznosostoykosti i sroka sluzhby mashin. t. 2 (Increasing the Wear Resistance and Extending the Service Life of Machines. v. 2) Kiyev, Izd-vo AN UkrSSR, 1960. 290 p. 3,000 copies printed.(Series: Its: Trudy, t. 2)

Sponsoring Agency: Vsesoyuznoye nauchno-tekhnicheskoye obshchestvo mashinostroitel'noy promyshlennosti. Tsentral'noye i Kiyevskoye oblastnoye pravleniya. Institut mekhaniki AN UkrSSR.

Editorial Board: Resp. Ed.: B. D. Grozin; Deputy Resp. Ed.: D. A. Draygor; M. P. Braun, I. D. Faynerman, I. V. Kragel'skiy; Scientific Secretary: M. L. Barabash; Ed. of v. 2: Ya. A. Samokhvalov; Tech. Ed.: N. P. Rakhlina.

PURPOSE: This collection of articles is intended for technical personnel of the machine industry and for workers of scientific

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Increasing the Wear Resistance (Cont.)

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research institutes and design and planning organizations.

COVERAGE: The collection contains papers presented at the Third Scientific Technical Conference held in Kiyev in September 1957 on problems of increasing the wear resistance and extending the service life of machines. The conference was sponsored by the Institut stroitel'noy mekhaniki AN UkrSSR (Institute of Structural Mechanics of the Academy of Sciences Ukrainian SSR), and by the Kiyevskaya oblastnaya organizatsiya nauchno-tekhnicheskogo obshchestva mashinostroitel'noy promyshlennosti (Kiyev Regional Organization of the Scientific Technical Society of the Machine-Building Industry). Papers presented at the conference were published in two volumes. The first volume contains papers presented at the plenary session and at the conference section on "Wear of Metals and Methods of Investigation". The second volume contains papers presented at the conference section on "Methods of Extending the Service Life of Machine Parts". These papers discuss mechanical, chemical, and electrolytic methods of increasing the durability (wear resistance and fatigue strength)

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of metallic and nonmetallic machine parts. Only methods which have found industrial application are reviewed. In addition to members of the editorial board the following persons participated in the preparation of the papers for publication: Professor M. P. Braun, Professor D. V. Vaynberg, Candidate of Technical Sciences I. P. Petrenko, Engineer M. D. Sinyavskaya, Candidate of Technical Sciences V. A. Shevchuk, Candidate of Technical Sciences V. N. Semirog-Orlik, Engineer V. F. Yankevich, Candidate of Technical Sciences M. L. Gorb, and others. References (mostly Soviet) accompany some of the papers.

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- Panchenko, N. P. [Candidate of Technical Sciences]. Re-
sidual Strain of Rings Made of ShKh15 Steel 70
- Shevchenko, P. V. [Candidate of Technical Sciences]. In-
vestigation of Damages to the Contact Surface of [Railroad-
Car] Wheels and Measures Taken to Increase Their Strength
and Extend Their Service Life 83

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ASTAF'YEV, V.

Voltage Regulators for Television Receivers, V. Astaf'yev, Lyubertsy, Moscow Oblast' and Kh. Fel'dman, Moscow. Radio No 2, pp 43-46, Feb 53.

Describes a manual type of voltage regulator based on the RAT-200/220 auto-transformer the KVN-49 and the T-2 Leningrad receivers. The first was developed by Astaf'yev and the second, by Fel'dman.

257T92

ASTAF'YEV, V. (Lyubertsy, Moskovskaya Oblast')

Loop-type television antenna. Radio no.7:40 J1 '54. (MLRA 7:7)
(Television--Antennas)

ASTAF'YEV, V. (g.Lyubertsy, Moskovskoy oblasti)

Preventive repair of the focusing resistor of a KVN-49 television
set. Radio no.8:38 Ag '54. (MIRA 7:8)

(Television--Receivers and reception)

Astaf'yev, V.
USSR/ Electronics - Safety equipment
Card 1/1 Pub. 89 - 22/30
Author : Astaf'yev, V.
Title : ~~Thunderstorm throw-over switch for television antennas~~
Periodical : Radio 3, 48 - 49, Mar 1955
Abstract : Specifications and detailed directions are given for the construction and mounting of a safety device, designed to protect television receiving sets and persons using them against atmospheric electricity during a storm or when the set is not working, under which conditions the outside antenna is grounded. Illustration; diagrams.
Institution :
Submitted :

OKUSHKO, N. (Simferepol'); ASTAF'YEV, V., inzh. (Minsk)

Machine measures and cuts fabrics. Mast.prom.i khud.promys. 1
no.2/3:45-46 N-D '60. (MIRA 14:4)
(Clothing industry--Equipment and supplies)

21(7)

AUTHOR:

Astaf'yev, V. A.

SOV/56-36-1-15/62

TITLE:

The Double Scattering of a π -Meson on a Nucleon at Relativistic Energies (Dvoynoye rasseyaniye π -mezona na nuklone pri relyativistskikh energiyakh)

PERIODICAL:

Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959, Vol 36, Nr 1, pp 98-107 (USSR)

ABSTRACT:

By means of Rak's method it is possible to derive a formula for the differential cross section that holds for any energies. This formula is suited for the analysis of the experimental data from the angular- and momentum distribution of the scattered mesons. In the theory of scattering an equation is formulated which connects the T-matrix with the reaction matrix K. In the two paragraphs of this paper this equation is investigated within the domain of mean relativistic energies in which the effects connected with triple scattering and with the production of "new" particles are still small. However, the nucleon must be treated as a relativistic particle in this domain. The exact posing of the problem of scattering leads to two equations with respect to the matrices T and K. The probability of transition from

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at Relativistic Energies

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the state a to the state b is connected with the matrix T_{ba} by the equation $w_{ba} = 2\pi |T_{ba}|^2 \rho(E_b)$, where $\rho(E_b)$ denotes the density of the states. The author first investigates the double scattering of a pion on a nucleon. The equation for the matrix $K_{\beta a}$ can be solved only with difficulty and is connected with a number of field approximations. Therefore, only the equation for the matrix T_{ba} is investigated and the equation for the matrix $K_{\beta a}$ is used only for the purpose of determining the general form of this matrix. The Hamiltonian of the symmetric pseudoscalar theory

$\hat{H}(x) = g \bar{\psi} \gamma_5 \vec{\tau} \psi \vec{\varphi}$ if $\bar{\psi} \gamma_5 \gamma_r \vec{\tau} \psi \frac{\partial \varphi}{\partial x_r}$ is used as operator of the interaction between the nucleon - and the meson field. Here $\bar{\psi}$ denotes the operator of the nucleon field, φ - the operator of the meson field, $\vec{\tau}$ - the vector of the isotopic spin of the nucleon, $\gamma_5 = \beta \gamma^1 \gamma^2 \gamma^3$, $\gamma_r = (\beta \alpha^k, \beta)$. $\hat{H}(x)$ is invariant with

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respect to rotations and reflections in the x-space and to rotations in the space of isotopic spin. The matrix K is represented by an iteration series, and an expression for the matrix element of K on a plane of the same energy is also given. This matrix is symmetric with respect to an interchange of all variables of the emitted mesons. The second paragraph of the present paper deals with the matrices K and T in the representation of total angular momenta. In this representation the matrix K is diagonal. By separation of the isotopic variables, the angular variables, and the spin variables a system of linearly-algebraic integral equations is obtained. In the third paragraph the cross sections of double scattering are calculated. First, the general relations for these cross sections are given, after which the theory of damping is discussed. Damping to a certain extent "corrects" the course taken by the curve for the dependence of the cross section on energy, although in the case of a low value of the coupling constant a distinct resonance-like character results (such as exists in the experimental curve). The damping theory also does not explain

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the existence of the second maximum on the curve for the energy-dependence of the total cross section. A mathematical appendix contains the angle-polynomials of the problem of double scattering. The author thanks M. A. Markov for posing the problem, G. F. Zharkov and A. M. Baldin for some valuable advice, as well as I. A. Yegorova and L. A. Isayeva for their help in numerical computations. There are 2 figures and 15 references, 3 of which are Soviet.

ASSOCIATION: Institut yadernoy fiziki Moskovskogo gosudarstvennogo universiteta (Institute for Nuclear Physics of Moscow State University)

SUBMITTED: May 9, 1958

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ASTAF'YEV, V.A. (Komsomol'sk-na-Amure)

Differential diagnosis of clncorchosis, metagonimiasis and
opisthorchosis by means of an examination of egg morphology.

Med.paraz.i paraz.bol. 29 no.5:607-609 S-0 '60.

(MIRA 13:12)

(TREMATOIDA)

ASTAF'YEV, V.A.

Pulse spectrum of π^+ -mesons in the reaction $\pi^+ + p \rightarrow 2\pi^+ + n$.
Zhur.eksp.i teor.fiz. 38 no.3:985-987 Mr '60.
(MIRA 13:7)

1. Institut yadernoy fiziki Moskovskogo gosudarstvennogo
universiteta.

(Mesons).

LOGACHEV, Yu.I.[translator]; TIMOFEYEV, G.A.[translator]; GORCHAKOV, Ye.V.[translator]; ASTAF'YEV, V.A.[translator]; SAVIN, B.I.[translator]; SHABANSKIY, V.P., red.; PAPTAYEV, V.A., red.; DUBKOVA, S.I., red.; PRIDANTSEVA, S.V., tekhn. red.

[Solar corpuscular streams and their interaction with geomagnetic field] Solnechnye korpuskuliarnye potoki i ikh vzaimodeistvie s magnitnym polem Zemli. Moskva, Izd-vo inostr. lit-ry, 1962. 438 p. Translated from the English. (MIRA 15:11)

1. Nauchno-issledovatel'skiy institut yadernoy fiziki Moskovskogo gosudarstvennogo universiteta (for Logachev, Timofeyev, Gorchakov, Astaf'yev, Savin).
(Solar radiation) (Magnetism, Terrestrial)

ASTAF'YEV, V.A.; IVANENKO, I.P.

Inverse problem in cascade theory. Izv. AN SSSR. Ser. fiz. 23
no.11:1847-1853 N '64. (MIRA 17:12)

1. Nauchno-issledovatel'skiy Institut yadernoy fiziki Moskovskogo
gosudarstvennogo universiteta.

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ACC NR: AP5024640

SOURCE CODE: UR/0048/65/029/009/1709/1713

AUTHOR: Astaf'yev, V.A.: Ivanenko, I.P.

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03

ORG: Scientific Research Institute of Nuclear Physics, Moscow State University
im. N.V. Lomonosov (Nauchno-issledovatel'skiy institut yadernoy fiziki Moskovskogo
gosudarstvennogo)

TITLE: Concerning the stability of the solution of the inverse problem in cascade
theory /Report, All-Union Conference on Cosmic Ray Physics held at Apatity 24-31
August 1964/

SOURCE: AN SSSR. Investiya. Seriya fizicheskaya, v.29, no. 9, 1965, 1709-1713

TOPIC TAGS: extensive air shower¹⁹, mathematic method, distribution function, inverse
problem,

ABSTRACT: The authors have recently discussed the inverse problem of cascade theory
(Izv. AN SSSR Ser. fiz., 1847, 1964) and have developed methods for calculating the
moments of the probability distributions for the elementary processes involved in a
cascade from observed characteristics of the cascade. In the present paper they dis-
cuss the stability of these methods, using as an example the simple Furry cascade (W.
H. Furry, Phys. Rev., 52, 569, 1937), by calculating the errors in evaluating the mo-
ments that arise from small errors in determining the cascade spectrum. The effects

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ACC NR: AP5024640

on the different moments of different kinds of experimental error are discussed at some length. It is concluded that the method shows promise but that much work remains to be done before the solution of the inverse cascade problem can be used to derive reliable information concerning the characteristics of the elementary interaction event from experimental data on cosmic ray showers. Orig. art. has: 13 formulas and 3 figures.

SUB CODE: NP,MA SUBM DATE: 00/

ORIG REF: 001/ OTH REF: 001

SC
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PHASE I BOOK EXPLOITATION

SOV/2200

Astaf'yev, Vladimir Aleksandrovich, and Nikolay Kuz'mich Barkov

Gidroturbiny i ikh obsluzhivaniya (Hydraulic Turbines and Their Maintenance)
Moscow, Gosenergoizdat, 1958. 300 p. Errata slip inserted. 4,700 copies
printed.

Ed.: A. M. Lokshin; Tech. Ed.: Ye. M. Soboleva.

PURPOSE: This is a textbook for hydraulic turbine maintenance personnel. It
may also be useful to students of technical schools which train technicians
for turbine departments of hydroelectric power stations.

COVERAGE: The book presents basic operating principles for high-power hydraulic
turbines and auxiliary equipment. Designs of hydraulic turbines and operational
and maintenance procedures are described. Problems dealing with the inspec-
tion and repair of hydraulic turbine installations are also briefly discussed.
Chapters I, II, IV, XI, XII, XIII, XIV, and XV were written by V. A. Astaf'ev.
Chapters III, V, VI, VII, VIII, IX, X, and Sections 46, 47, 60, and 64 were
written by N. K. Barkov. No personalities are mentioned. There are 32 ref-
erences, all Soviet.

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8. List of hydraulic turbine subassemblies of mechanical part of a generator and auxiliary equipment

298

Bibliography

299

AVAILABLE: Library of Congress (TJ 870. A8)

GO/fal
10-14-59

Card 8/8

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VAYTS, V.M., red.

[Hydraulic turbines and their maintenance] Gidroturbiny i
ikh obsluzhivanie. Moskva, Energiia, 1965. 352 p.
(MIRA 18:9)

BAKLASTOV, A.M., kand. tekhn.nauk; SOKOLOVSKIY, V.S., kand. tekhn. nauk;
SERGAZIN, Zh.F., inzh., dissertant; ASTAF'YEV, V.B., inzh.

Electric film transducer for measuring air moisture. Teploenergetika
12 no.5:75-77 My '65. (MIRA 18:5)

1. Moskovskiy energeticheskiy institut.

L 63195-65 ENT(17)/PCG GW
ACCESSION NR: AP5014152

UR/0143/65/000/005/0120/0123
533.27

AUTHOR: Baklasov, A. M. (Candidate of technical sciences); Sokolovskiy, V. S.
(Candidate of technical sciences); Sergazin, Zh. F. (Engineer); Astaf'yev, V. B.
(Engineer) ⁵⁵ ₅₅

TITLE: Using an electrofilm sensor for measuring air humidity ¹⁸
_{55, 12}

SOURCE: IVUZ. Energetika, no. 5, 1965, 120-123

TOPIC TAGS: humidity measurement, hygrometer
_{qm 55, 12}

ABSTRACT: Experiments are described in which the air humidity was determined by measuring the current in a moisture-sensitive polyvinyl-buteral film (TU MKhP, no. 2213-54 prepared by the Kuskov chemical factory) to which two platinum electrodes were applied. Lithium chloride was admixed to the film material. A-c voltages of 10, 15, 20, and 30 v, 50 cps were applied to the electrodes during the investigation, and current-vs.-humidity curves were

Card 1/2

L 63195-65

ACCESSION NR: AP5014152

measured. The direct electrical indication of humidity and zero inertia of the instrument are noted as advantages. The experiments are to be continued. "Recommendations of A. S. Naumovets, who dealt with the problem at MVTU," were used by the authors. Orig. art. has: 3 figures and 2 formulas.

ASSOCIATION: Moskovskiy energeticheskiy institut (Moscow Power-Engineering Institute)

SUBMITTED: 20Apr64

ENCL: 00

SUB CODE: EC, ES

NO REF SOV: 000

OTHER: 000

mlb
Card 2/2

SHISHKIN, Nikolay Fedorovich, kand.tekhn.nauk; OLEKSEVICH, Valeriy Pavlovich;
 DANILIN, Petr Yakovlevich; MIKHEYEV, Yuriy Aleksandrovich; SYCHEV,
 Leonid Ivanovich. Prinsipali uchastiye: SHALAGIMOVA, T.S., inzh.;
 SMORODINSKIY, Ya.M., kand.tekhn.nauk; KALINICHENKO, M.F., inzh.;
 CHASHKIN, Ye.V., inzh.; ASTAF'YEV, V.D., inzh.; PROKOP'YEV, V.I.,
 vedushchiy konstruktor; ROGOV, V.A., staryshiy master; MOSKALENKO, V.M.,
 laborant; GERASIMOV, N.F., laborant; POPOV, N.A., kand.fiziko-matem.
 nauk; KALINICHENKO, M.F., inzh.; LYUBIMOV, N.G., otv.red.; ALADOVA,
 Ye.I., tekhn.red.; PROZOROVSKAYA, V.L., tekhn.red..

[Protection of the electric equipment and cable networks in mines]
 Zashchita shakhtnykh elektronstanovok i kabel'nykh setei. Pod red.
 N.F.Shishkina. Moskva, Ugletekhizdat, 1959. 242 p. (MIRA 12:3)
 (Electricity in mining) (Electric cables)

ASTAP'YEV, Viktor Dmitriyevich; GUTOROV, V.I., inzh., retsenzent;
YAKOVLEVA, V.I., red.; TIKHANOV, A.Ya., tekhn.red.

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extension springs] Spravochnik po raschetu tsilindricheskikh
vintovykh pruzhin szhatiia -- rastiazheniia. Moskva, Gos.
nauchno-tekhn.izd-vo mashinostroitel'noy, 1960. 123 p.

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Slide rule used in designing springs. Vest.mashinostr. 42
no.11:87-88 N '62. (MIRA 15:11)
(Slide rule)

ASTAF'YEV, V.D., inzh.

Nomographic determination of billet length and spring weight. Vest.
mashinostr. 44 no.1:36-38 Ja '64. (MIRA 17:4)

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trud. Kursk. gos. med. inst. no.13:137-140 '58. (MIRA 14:3)

1. Iz kliniki gospiatal'noy khirurgii (zav. - prof. A.V.Belichenko)
Kurskogo gosudarstvennogo meditsinskogo instituta.
(AORTA—SURGERY) (HYPOTHERMIA)
(TRANSPLANTATION OF ORGANS, TISSUES, ETC.)

ASTAF'YEV, V.I.

Repair of small defects of the arterial wall with transplants by attachment of small patches. Sbor. trud. Kursk. gos. med. inst. no.13:141-143 '58.
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1. Iz kliniki gosptal'noy khirurgii (zav. - prof. A.V.Belichenko). Kurskogo gosudarstvennogo meditsinskogo instituta.
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(TRANSPLANTATION OF ORGANS, TISSUES, ETC.)

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(LUNGS---TUMORS) (BONES---DISEASES) (JOINTS---DISEASES)

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onk. 8 no.4:14-22 '62. (MIRA 15:4)

1. Iz laboratorii eksperimental'noy khimioterapii (zav. - chl.-
korr. AMN SSSR prof. L. F. Lariyonov) Instituta eksperimental'-
noy i klinicheskoy onkologii AMN SSSR (dir. - deystv. chl. AMN
SSSR, prof. N. N. Blokhin)

(ENDOXAN)

KHOLOD, A.V., prof.; ASTAF'YEV, V.I., kand. med. nauk

Transpleural approach to the spleen. Khirurgiia 39
no.10:85-87 O '63.

(MIRA 17:9)

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Diagnosis and treatment of diaphragmatic relaxation. Klin.
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SO: U-3600, 10 July 53, (Letopis 'Zhurnal 'nykh Statey, No.6, 1949).

ASTAF'YEV, V. M.

PA 149T51

USSR/Mathematics - Equations, Dif- 21 Sep 49
ferential
Engineering - Turbines, Gas

"Differential Equations of Gas Turbines With an
Infinitely Large Number of Blades, and Their
Integrals," V. M. Astaf'yev, Moscow State Uiment
M. V. Lomonosov, 3 pp

"Dok Ak Nauk SSSR" Vol LXVIII, No 3

A new presentation of Stodola's discussion, in
1905 - 1907, of an abstract scheme of flow with
infinitely many blades; a new model leading to
new results. Discussion follows the plan:

149T51

USSR/Mathematics - Equations, Dif- 21 Sep 49
ferential (Contd)

curvilinear coordinates forming a system of ro-
tation, equations of flow in coordinates s, r , a
with a equals constant angle, equations of im-
mobile blades realizing ruled flow, and equations
of rotating blades realizing adiabatic flow uni-
form along an axis. Submitted by M. A. Lavrent'-
yev, 27 Jun 49.

149T51

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Title tr.: Differential equations of gas turbines with an infinite number of blades and their integrals.

Reviewed by J.B. Diaz in Mathematical Reviews, 1950, v.11, no.4, p.275-276.

AS262.S3663 v.68

SO: Aeronautical Sciences and Aviation in the Soviet Union, Library of Congress, 1955

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Power engineers of the Irkutsk Economic Region in their struggle
for savings in electric power. Prom.energ. 15 no.6:7-10 Je
'60. (MIRA 13:7)
(Irkutsk Province--Electric power)

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1396. DIFFERENTIAL EQUATIONS OF GAS TURBINES WITH INFINITE NUMBER OF BLADES, AND THEIR INTEGRALS. Astaf'ev VN (Doklady Akad. Nauk S.S.S.R. (Rep. Acad. Sci. U.S.S.R.), 1949, vol. 68, (3), 449-452). "new version of an abstract conception of 1905-1907 (A. Stodola, Zeitschrift für das Gesamte Turbinenwesen, 1907, (245)) leading to new results. (L)

ASD-ILA METALLURGICAL LITERATURE CLASSIFICATION

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ASTAF'YEV, V. P.
CA

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The permutite process of water softening. V. P.
Astaf'ev. *J. Chem. Ind. (Moscow)* 1934, No. 2, 50-3.
H. M. Leicester

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

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|--|--|--|--|
| <p>CA 14-07AF/12/14</p> | | <p>PROCESSING AND PROPERTIES NOTES</p> | |
| <p>Common Elements</p> | | <p>Common Variants Notes</p> | |
| <p>Materials Notes</p> | | <p> <p>Drying blast-furnace air and other gases with mineral gels. N. E. Astashev. <i>Trans. All-Union Sci. Research Inst. Econ. Minerals</i> (U. S. S. R.) No. 91, 4-41 (in English 82) (1936).—A discussion from the tech. and economical viewpoints of the dehydration of air blast with mineral gels in blast-furnace operation is chiefly based on literature and lab. rectecking of foreign methods. Silica gel is prepd. by pouring 20% B₂ Na₂SiO₃ into 30% B₂ H₂SO₄. Al silica gel is obtained from nephelite soln. in H₂SO₄ (18% B₂) on dilg. it to 4-5% B₂ and neutralizing with Na₂SiO₃ soln. to phenolphthalein. Ferro-silica gel is similarly prepd. from Fe ore. The gels are washed nearly free from SO₂, then pressed at 10-15 atm., dried at 120° and, after grinding, are sifted. The gels are activated by a treatment with a neutral or slightly acid (HCl) CaCl₂ soln. and drying at 160°. At a mean moisture content in the air of 11 g./cu. m., silica gel absorbs 7% and the mixed gels 13% H₂O of their own wt. After activation with CaCl₂ the sorption is increased to 27% with a complete dehydration of air. Similar results are obtained with H₂, N and other gases. The air-drying installation by Silica-gel Corporation is considered as more highly developed and simple in construction and operation. The desorption of gels at 300-400° is a more rapid and economical procedure. According to lab. expts. for drying air with moisture content of 8 g./cu. m. at a blast rate of 1500 cu. m./min. 15 tons (19 cu. m.) of activated gel is required, and with 3 g./cu. m. moisture content 10 tons (12 cu. m.). After 4-5 hrs. of dehydration the gel is desorbed for 1 hr. About 20 references.</p> <p>Chus. Blanc</p> </p> | |
| <p>ASB-SLA DETAILING LITERATURE CLASSIFICATION</p> | | <p>FROM SOURCE</p> | |
| <p>140349 2</p> | | <p>140349 2</p> | |
| <p>140349 2</p> | | <p>140349 2</p> | |

| REGION | | SUBJECT | | AUTHOR | | TITLE | | JOURNAL | | YEAR | | VOLUME | | PAGE | | ISSN | | CODEN | | ABSTRACT | | NOTES | |
|--|--|---------|--|--------|--|-------|--|---------|--|------|--|--------|--|------|--|------|--|-------|--|----------|--|-------|--|
| | | | | | | | | | | | | | | | | | | | | | | | |
| <p>Experiments on water softening with humus coals V. P. Astaf'ev and M. F. Astaf'eva (Moskovskiy Inst. Mineral'nogo Syt'ya). <i>Zh. Ekonomika Topliva</i> 3, No. 1, Mineral'nogo Syt'ya (1946). - Humus coals suitable for water softening are found in the Moscow region (I), Bogoslov deposit (II) (north of Sverdlovs), in Bashkiria (III), and other de- posits. The exchange capacity of I of grain size 0.3-1 mm. is 400-800 and of size 0.3-1 mm. is 600-1200 tons per degree per cu.m. The exchange capacity of II is 1200 tons per degree per cu.m. and III is similar to I. Expts. are reported on using 1, repeatedly regenerated, for softening feed water. The effectiveness of I in this respect was 2-4 times greater than that of glauconite.</p> | | | | | | | | | | | | | | | | | | | | | | | |
| <p>ASB.SLA METALLURGICAL LITERATURE CLASSIFICATION</p> | | | | | | | | | | | | | | | | | | | | | | | |
| <p>REGION SYMBOLIC SUBJECT SYMBOL AUTHOR SYMBOL TITLE SYMBOL JOURNAL SYMBOL YEAR SYMBOL VOLUME SYMBOL PAGE SYMBOL ISSN SYMBOL CODEN SYMBOL ABSTRACT SYMBOL NOTES SYMBOL</p> | | | | | | | | | | | | | | | | | | | | | | | |

ASTAF'YEV, V.P.

2748. Quantitative and qualitative determination of the composition of clays, bauxites and certain other minerals by the method of heating. V. P. Astaf'ev. *Issledovaniya Mineral'nogo Svyazya*. Published by Gosgeoltekhizdat, 1955, pp. 85-93; Ref. Zhur., Khim., 1955, Abstr. No. 49,209.—The determination of their loss in weight on heating can be used to establish the approx. composition of clays, bauxites and some other minerals. At 350° to 400° C, oxidation and burning of organic components occurs, at 550° to 600° C there is loss of water of hydration, and above 600° C there is loss of CO₂ and SO₂ and also halogens. Samples are air-dried for 3 or 4 days; then 3 to 5 g are heated, first at 100° to 110° C for 4 to 5 hr. then at 400° to 500° C for 2 hr., followed by heating at 800° C (or in the absence of carbonates and sulphates at 600° to 700° C). Tables showing losses in weight for various materials at various temp. are given.

G. S. SMITH

L 36304-65 EPA(s)-2/EWT(m)/EPF(c)/EWP(v)/EWR/EWP(j)/T: P(t)/EWP(k)/EWP(l)/
EWA(c) PC-A/Pf-A/Ps-A Ps-A WN/JD/HM/IM

ACCESSION NR: AP4047231

S/0125/64/000/010/0078/0079

AUTHORS: Astaf'yev, V.S. (Engineer) (Moscow); Andreyev, M. P. (Engineer) (Moscow)

TITLE: Glued joints in industrial ventilation units

SOURCE: Avtomaticheskaya svarka, no. 10, 1964, 78-79

TOPIC TAGS: glued joint, spot weld, glue composition, air tightness, epoxy resin

ABSTRACT: A combination of gluing and contact spot welding produced sound joints after an increase in the distance between spots. Air-hardening glues which do not require additional heat treatment for polymerization are suitable in the manufacturing of industrial ventilation by this method. An EK-16 glue of the following composition was developed: epoxy resin ED-6 - 100 parts (weight); 2% solution of acrylonitrile rubber SKN-40 in dibutylphthalate; 30 parts (weight); polyethylene polyamine - 10 parts (weight). Air-tightness tests of the specimens varying in thickness from 0.8 to 3 mm revealed the absence of leaks. Preliminary reduction of 0.6 to 1 sec is recommended and a 15 to 20% electrode reinforcement

Card 1/2

L 36304-65

ACCESSION NR: AP4047231

while the welding current should be diminished by 10 to 15%.
Mechanical tests proved the superiority of the connections produced
by this method over welded connections. O r i g. art. has: 2
tables.

ASSOCIATION: None

SUBMITTED: 01Jul64

ENCL: 00

SUB CODE: MM

NR REF SOV: 002

CTHER: 000

Card 2/2 *JO*

28(0); 10(2); 25(2)

PHASE II BOOK EXPLOITATION

SOV/2036

Moscow. Vyssheye tekhnicheskoye uchilishche imeni N. E. Baumana

Mekhanika; sbornik statey (Mechanics; Collection of Articles) Moscow, Oborongiz, 1959. 119 p. (Series: Its: Trudy vyp. 92) 3,400 copies printed. Errata slip inserted.

Ed. (Title page): V. V. Dobronravov, Doctor of Physical and Mathematical Sciences, Professor; Ed. (Inside book): Ye. V. Latynin, Engineer; Ed. of Publishing House: L. I. Sheynfayn; Tech. Ed.: V. P. Rozhin; Managing Ed.: A. S. Zaymovskaya, Engineer.

PURPOSE: This book is intended for scientific and research personnel, engineers, and students of advanced courses at instrument-making and machine design vuzes.

COVERAGE: This volume deals with problems frequently encountered in modern instrument making and in designing specialized machines and includes general theory of automatic control, vibrations, theoretical and applied gyroscopy, stability of motion, etc. Abstracts of the individual articles are given in the Table of Contents.

Card 1/6

Mechanics; Collection of Articles

SOV/2036

TABLE OF CONTENTS:

Preface V. V. Dobronravov 3

Astaf'yev, V. V. Assistant . A More Accurate Consideration of the Effect of the Motion of the Stationary Point of a Gyroscope on the Character of the Motion of the Gyroscope 5

The author discusses kinematic relationships, dynamic relationships, various cases of motion of the vehicle, and neglect of the quantity

$\frac{v_E}{R} \tan \psi$. He increases the accuracy of the classical results

obtained by B. V. Bulgakov, an outstanding Soviet gyroscopist, and which pertain to an investigation of the effect of the accelerations of an aircraft on the motion of a gyro pendulum as the basic element of some gyro instruments. In setting up the equations of motion of the gyro pendulum, the author takes into account the nonlinear terms

Card 2/6

Mechanics; Collection of Articles

SOV/2036

previously neglected, and a more exact map of the operation of the gyro pendulum emerges. The results obtained will unconditionally be useful in producing gyroscopes, the operating-accuracy requirements for which are increasing all the time. References: 1 Soviet.

Orekhov, P. V. [Candidate of Technical Sciences, Docent]. Derivation of a Formula for the Gyroscopic Moment With the Aid of Coriolis' Dynamical Theorem

24

This article shows the derivation of the formula for the gyroscopic moment with the aid of Coriolis' theorem. The gyroscopic effect is encountered in many fields of instrument making and machine design so that a descriptive explanation of this phenomenon is very practical.

Shigin, Ye. K. [Research Fellow]. Nonlinear Automatic Control Systems With an Element Having Δ - type Characteristics

28

This paper develops a new control method using non-linear systems of a special form and having particular characteristics called Delta-characteristics. The method permits a considerable improvement of the transient process, reducing the amount of overshoot and the time

Card 3/6

Mechanics; Collection of Articles

SOV/2036

of the transient process. The concepts of the author may be useful particularly for obtaining desirable conditions in rapidly changing processes and phenomena. References: 5 Soviet.

Lobacheva, N. K. [Assistant]. Use of Galerkin's Method for Finding a Periodic Solution of the Differential Equations of Nonlinear Oscillations 49
This paper analyzes some peculiarities of modern methods for the study of nonlinear oscillations observed in various fields of instrument making. References: 5 Soviet, 2 translations from English.

Golenko, K. A. [Junior Scientist]. Flow of a Viscous Incompressible Fluid in a Rotating Cylinder 59
This paper presents an analytical study of the flow of a viscous fluid in a rotating cylindrical tube. The solution assumes the tube to be infinitely long and permits taking into account known angular accelerations of the tube. The solution has application to such practical problems as the supply of lubricant in piston engines and the cooling of turbine rotors. The analysis is also applicable to the inverse problem, that is, the effect of the internal motion of the fluid on the motion of the cylindrical body. References: 2 Soviet, 1 translation from English.

Card 4/6

Mechanics; Collection of Articles

SOV/2036

Zamuruyev, G. I. [Assistant]. On a Method of Determining the Stability Criterion for the Operation of Liquid-Fuel Rocket Engines

66

This paper investigates a timely problem in modern rocket technology, namely, the problem of harmful fluctuations of pressures in the chamber of a liquid-fuel rocket engine occurring during the combustion process. The author investigates the entire hydraulic circuit supplying fuel to the combustion chamber and determines the parameters required for stability of the process. References: 2 Soviet, 1 translation into Russian.

Zakharov, Yu. Ye. [Research Fellow]. Determination of the Axial Hydrodynamic Force on the Valves of Hydraulic Servomechanisms

85

This report considers the processes taking place inside the valves of hydraulic servomechanisms. The phenomena associated with the flow of a viscous fluid inside a complex geometrical configuration with specific boundary conditions are of great importance in the investigation of the entire hydraulic servomechanism and, consequently, in setting up the equations of motion of the whole automatic-control system. References: 2 Soviet and 1 English.

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Card 5/6

ASTAF'YEV, V. Ya.

Astaf'yev, V. Ya.

"The use of the Method of Electrical Conductivity for Investigating the Electrocrystallization of Metals on a Cathode." Min Higher Education USSR. Leningrad Polytechnic Inst imeni M. I. Kalinin. Leningrad, 1955. (Dissertation for the Degree of Candidate in Technical Sciences)

SO: Knizhnaya letopis' No. 27, 2 July 1955

PROKHOROV, Mikhail Andreyevich; ASTAF'YEV, V.Ya., kand.nauk, red.;
TSAR'KOV, V., red.; VORONKOVA, Ye., tekhn.red.

[Hearing and sound] Zvuk i slukh. Pod red. V.IA. Astaf'eva.
Penza, Penzenskoe knizhnoe izd-vo, 1959. 38 p. (MIRA 13:2)
(Sound) (Hearing)

ASTAF'YEV, Viktor Yakovlevich, prepodavatel'; PROKHOROV, Mikhail Andreyevich, prepodavatel'; TOIMIRIDI, L., red.; VORONKOVA, Ye., tekhn.red.

[Automation in the manufacture of precast reinforced concrete]
Avtomatizatsiia v proizvodstve sbornogo zhelezobetona. Penza,
Penzenskoe knizhnoe izd-vo, 1961. 61 p. (MIRA 15:4)

1. Penzenskiy inzhenerno-stroitel'nyy institut (for Astaf'yev,
Prokhorov).

(Automation)

(Precast concrete)

ASTAF'YEV, V.Ya.

Determination of faults in an isolating junction. Avtom., telem.
i sviaz' 7 no.12:32-33 D '63. (MIRA 17:4)

1. Starshiy elektromekhanik 4-y Chelyabinskoy distantzii signalizatsii
i svyazi Yuzhno-Ural'skoy dorogi.

L 13086-65 EWT(1)/EPF(o)/EPF(x)-2/EPR/EEC(t)/T/EEC(b)-2/EPA(Sb)-2/EEC(b)-3/EWA(1)/
Fr-4/PS-4/Pu-4/PL-4 IJP(c)/AFED(t)/BSD/EDC(a) WW

ACCESSION NR: AP4047362

S/0139/64/000/005/0144/0149

AUTHOR: Astaf'yev, V. Ya.

8

TITLE: Radiant heat exchange between a light source and the infra-
red part of its radiation

SOURCE: IVUZ. Fizika, no. 5, 1964, 144-149

TOPIC TAGS: incandescent cathode, radiant heat, heat exchange, ir
radiation

ABSTRACT: In view of the fact that the bulk of radiation from in-
candescent light sources is in the form of infrared emission which
produces no visible light, the author examines means of feeding back
this otherwise useless infrared radiation to the incandescent light
source, thereby increasing its temperature or decreasing the exter-
nal power necessary to produce the incandescence. Four series of
measurements were made, one without the radiant heat exchange, one

Card 1/4

L 13086-65

ACCESSION NR: AP4047362

0

with the infrared energy reflected by a plane mirror, and two using two incandescent sources in the foci of parabolic and elliptic mirrors, respectively. The tests were made on an optical bench and the set-up is illustrated in Fig. 1 of the enclosure. The results show that even under unfavorable heat exchange conditions (energy losses due to convection, conduction, and the fact that the reflecting systems were not enclosed) the light yield from tungsten, nichrome, and carbon is increased 22, 23, and 30% respectively by a plane mirror (set-up a), 22, 23, and 30% respectively in set-up b, 25, 33, 48% in set-up c, and 30, 43, and 60% in set-up d, respectively. Formulas are presented, assuming perfect heat exchange, to predict the gain in light yield under practical conditions. It is concluded from the results that vacuum incandescent lamps with light yields much higher than presently available can be constructed on the basis of this phenomenon. Orig. art. has: 1 figure, 1 table, and 6 formulas.

Card 2/4

L 13086-65

ACCESSION NR: AP4047362

ASSOCIATION: Penzenskiy inzhenerno-stroitel'nyy institut (Penza
Construction Engineering Institute)

SUBMITTED: 13 May 63

ENCL: 01

SUB CODE: OP

NR REL SOV: 004

OTHER: 000

Card 3/4

L 13086-65

ACCESSION NR: AP4047362

ENCLOSURE: 0;

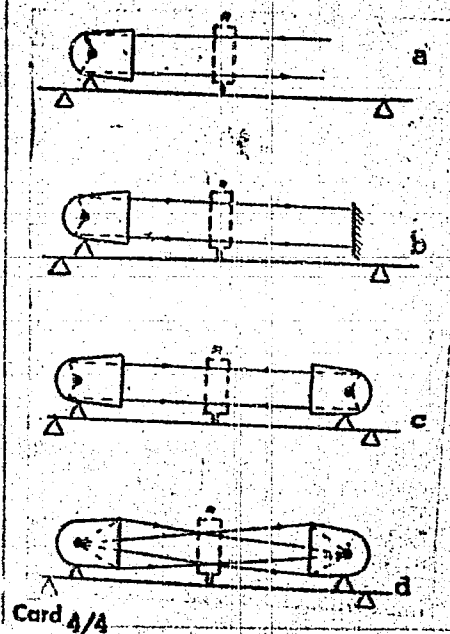


Fig. 1. Some cases of radiant heat exchange between an incandescent body and its own ir emissions: a - no heat exchange, b - radiant heat exchange between the incandescent body and its own ir emission, c and d - radiant heat exchange of the ir part of the emission between two symmetrically placed incandescent bodies.

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(Building materials--Transportation)
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18.2000

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SOV/149-60-1-3/27

AUTHORS: Bogolyubov, B. P., Astaf'yev, Yu. P.

TITLE: Concerning Ore Chute Location in Quarries

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Tsvetnaya metallurgiya, 1960, Nr 1, pp 19-28 (USSR)

ABSTRACT: When preparing deposits for open-cut mining in mountain districts, subterranean structures such as tunnels and ore chutes are widely used. The experience in mountain quarries has shown that ore chutes can be placed either outside or inside the quarries. The former are permanent and permit the use of crushers which eliminate frequent jamming of the chute; the latter have to be abandoned frequently as the ore in the area is exhausted, but ore hauling to the chute which is near the quarrying spot is more economical. The selection of one or another location for the chutes is made for purely economic reasons and can be estimated with the help of following equations which reflect the influence of the hauling

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distance of the ore to the chute

$$n_t = \frac{60 T K_w}{t_0}; \quad t_0 = t_1 + t_0' = \frac{120l}{v} + t_0';$$

$$n_t = \frac{60 T K_w}{\frac{120l}{v} + t_0'} = \frac{0,57 K_w v}{l + 0,008 t_0' v}; \quad Q_t = n_t q \beta n'_s; \\ N_p = \frac{Q}{Q_t} K = \frac{2 Q_t K (l + 0,008 t_0' v)}{T K_w v q \beta n'_s}; \quad (1)$$

$$N = 1,20 - 1,25 N_p;$$

$$a = \frac{N_p C n'_s}{Q_q} = \frac{2 Q_q K (l + 0,008 t_0' v)}{T K_w v q \beta n'_s} \cdot \frac{C n'_s}{Q_q}$$

$$a = \frac{2 C K (l + 0,008 t_0' v)}{T K_w v q \beta}. \quad (2)$$

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where l is average ore hauling distance, km; n_t is number of trips per shift; T is length of shift, hours; K_u is utilization coefficient of self-dumping trucks; t_o^u is time of truck round trip, minutes; t_1 is traveling time of loaded and empty truck, min; t_o' is total loading, unloading and waiting for self-dumping truck; v is average truck speed, km/hr; Q_t is average daily trucking rate of one truck, tons/day; q is load carrying capacity of truck, tons; β is coefficient of utilization of this capacity; n_s' is number of diurnal truck shifts; N_p is number of operating trucks; Q_q is daily productivity of quarry, ton per day; K is a coefficient reflecting nonuniformity of loading; a is cost of hauling one ton of ore by self-dumping truck, exclusive of amortization, rubles/ton; C is cost of one truck shift excluding amortization, rubles; N is number of trucks in the pool. The cost of ore hauling to a chute outside the quarry is expressed by

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$$a_1 = \frac{\sum_{i=1}^n P}{Q_s} + \frac{n \cdot n_w \cdot a_w \cdot n_s}{Q_r} + C \frac{2,5 K (l_1 + 0,008 t_0' v)}{T K_w v q \beta n_s' t n_d} + \frac{2C}{T} \frac{K (l_1 + 0,008 t_0' v)}{K_w v q \beta} \quad (3)$$

where $\sum_{i=1}^n P$ is the expense of building the chute and other related expense, rubles; Q is reserves of the quarry, tons; C is cost of one self-dumping truck, rubles; n is number of simultaneously operated ore chutes; n_w is number of workmen employed at ore reception, men; a_w is average wages of receiver per shift, rubles; n_s is number of working shifts in 24 hr; l_1 is average hauling distance to outside chutes, km; t is average truck life, years; n_d is number of working days of quarry in

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year; For the determination of similar costs of a chute inside the quarry instead of the quantity one uses the quantity $\sum_1^n P$ and l_2 instead of $l_1 > l_2$. It is possible to calculate with the help of (3) the difference in distance at which both methods can be used.

$$l_1 - l_2 = \frac{0,5 \left(\sum_1^n P - \sum_1^n P \right) mn'_s tn_1}{Q_s K (1,25 C + C_s n'_s tn_1)}, \quad (4)$$

From which the optimal hauling distance for a chute outside the quarry is easily found. Methods for the calculation of the average depth of the quarry justifying outside chutes and their yearly saving, as well as the amortization time of the additional capital expenses are derived. Following these methods the authors prepared a calculation for four quarries. It showed that

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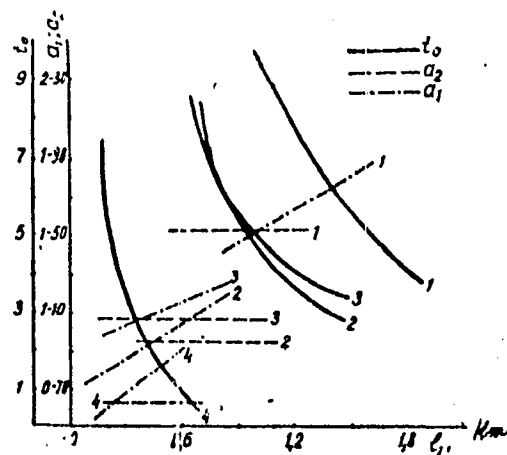
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inside location of the chutes is more advantageous than outside location. The different conditions of these quarries and the optimal solutions of ore chute location are expressed graphically as shown in Fig. 2. Naturally, the greater the hauling distance, the greater the advantage of inside chutes. The production volume of the quarry influences the pay-off period of additional capital expenses very strongly, e.g., an increase in the production of quarry (1) from 600,000 to 1,800,000 tons per year reduces this period from 9.5 to 2.3 years. This saving is, naturally, counteracted by a more rapid depletion of the quarry in the second case. Although chutes situated inside quarries are more numerous than the other type, it is important to approach each case analytically and individually. The use of several chutes is preferable, simplifying hauling problems from different ore bodies and lessening the possibilities of jamming. The authors submit different configurations of the quarry necessitating a corresponding placing of chutes and submit equations solving these problems.

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Fig. 2. Changes in the chute location depending on different mining conditions characterizing four quarries.

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There is 1 table; and 5 figures.

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SUBMITTED: June 19, 1959

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